

1 TCAGATTTCCATCAGCAGGATGTGGGGGCTCAAGTTCTGCTGCTACCTGTGGTGAGCTT 60  
1 M W G L K V L L L P V V S F 14  
  
61 TGCTCTGTACCCTGAGGAGATACTGGACACCCACTGGGAGCTATGGAAGAAGACCCACAG 120  
15 A L Y P E E I L D T H W E L W K K T H R 34  
  
121 GAAGCAATATAACAACAAGGTGGATGAAATCTCTCGGCGTTTAATTTGGGAAAAAACCT 180  
35 K Q Y N N K V D E I S R R L I W E K N L 54  
  
181 GAAGTATATTTCCATCCATAACCTTGAGGCTTCTCTTGGTGTCCATACATATGAACTGGC 240  
55 K Y I S I H N L E A S L G V H T Y E L A 74  
  
241 TATGAACCACCTGGGGGACATGACCAGTGAAGAGGTGGTTCAGAAGATGACTGGACTCAA 300  
75 M N H L G D M T S E E V V Q K M T G L K 94  
  
301 AGTACCCCTGTCTCATTCCCGCAGTAATGACACCCTTTATATCCCAGAATGGGAAGGTAG 360  
95 V P L S H S R S N D T L Y I P E W E G R 114  
  
361 AGCCCCAGACTCTGTCTGACTATCGAAAGAAAGGATATGTTACTCCTGTCAAAAATCAGGG 420  
115 A P D S V D Y R K K G Y V T P V K N Q G 134  
  
421 TCAGTGTGGTTCCTGTGTTGGGCTTTTAGCTCTGTGGGTGCCCTGGAGGGCCAACTCAAGAA 480  
135 Q C G S C W A F S S V G A L E G Q L K K 154  
  
481 GAAAACTGGCAAACTCTTAAATCTGAGTCCCCAGAACCTAGTGGATTGTGTGTCTGAGAA 540  
155 K T G K L L N L S P Q N L V D C V S E N 174  
  
541 TGATGGCTGTGGAGGGGGCTACATGACCAATGCCTTCCAATATGTGCAGAAGAACCGGGG 600  
175 D G C G G G Y M T N A F Q Y V Q K N R G 194  
  
601 TATTGACTCTGAAGATGCCTACCCATATGTGGGACAGGAAGAGAGTTGTATGTACAACCC 660  
195 I D S E D A Y P Y V G Q E E S C M Y N P 214  
  
661 AACAGGCAAGGCAGCTAAATGCAGAGGGTACAGAGAGATCCCCGAGGGGAATGAGAAAGC 720  
215 T G K A A K C R G Y R E I P E G N E K A 234

**FIG. 1A**

721 CCTGAAGAGGGCAGTGGCCCGAGTGGGACCTGTCTCTGTGGCCATTGATGCAAGCCTGAC 780  
 235 L K R A V A R V G P V S V A I D A S L T 254  
  
 781 CTCCTTCCAGTTTTACAGCAAAGGTGTGTATTATGATGAAAGCTGCAATAGCGATAATCT 840  
 255 S F Q F Y S K G V Y Y D E S C N S D N L 274  
  
 841 GAACCATGCGGTTTTGGCAGTGGGATATGGAATCCAGAAGGGAAACAAGCACTGGATAAT 900  
 275 N H A V L A V G Y G I Q K G N K H W I I 294  
  
 901 TAAAAACAGCTGGGGAGAAAAGTGGGGAAACAAAGGATATATCCTCATGGCTCGAAATAA 960  
 295 K N S W G E N W G N K G Y I L M A R N K 314  
  
 961 GAACAACGCCTGTGGCATTGCCAACCTGGCCAGCTTCCCCAAGATGTGACTCCAGCCAGC 1020  
 315 N N A C G I A N L A S F P K M \* 329  
  
 1021 CAAATCCATCCTGCTCTTCCATTTCTTCCACGATGGTGCAGTGTAAAGATGCACTTTGGA 1080  
 1081 AGGGAGTTGGTGTGCTATTTTTGAAGCAGATGTGGTGATACTGAGATTGTCTGTTTCAGTT 1140  
 1141 TCCCCATTTGTTTGTGCTTCAAATGATCCTTCCCTACTTTGCTTCTCTCCACCCATGACCT 1200  
 1201 TTTTCACTGTGGCCATCAGGACTTTCCCTGACAGCTGTGTACTCTTAGGCTAAGAGATG 1260  
 1261 TGACTACAGCCTGCCCCTGACTGTGTTGTCCCAGGGCTGATGCTGTACAGGTACAGGCTG 1320  
 1321 GAGATTTTACATAGGTTAGATTCTCATTACGGGACTAGTTAGCTTTAAGCACCCCTAGA 1380  
 1381 GGACTAGGGTAATCTGACTTCTCACTTCCCTAAGTTCCCTTCTATATCCTCAAGGTAGAAA 1440  
 1441 TGTCTATGTTTTCTACTCCAATTCATAAATCTATTCATAAGTCTTTGGTACAAGTTTACA 1500  
 1501 TGATAAAAAGAAATGTGATTTGTCTTCCCTTCTTTGCACTTTTGAAATAAAGTATTTATC 1560  
 1561 TCCTGTCTACAGTTTAATAAATAGCATCTAGTACACATTCAAAAAAAAAAAAAAAAAAAAAA 1619

**FIG. 1B**

	1		50
HumcatO	.....MW	GLKVLLLPVV SFA.LYPEEI LDTHWELWKK	THRKOYNMKV
RabOC-2	.....MW	GLKVLLLPVV SFA.LHPEEI LDTQWELWKK	TYSKOYNMKV
HumcatS	.....MKR	LVCVLLVCSS AVAQLHKDPT LDHHWHLWKK	TYGKQYKEKN
HumcatL	.....MNPTL	ILAAFCLGIA S.ATLTFDHS LEAQWTKWKA	MHNRLY.GMN
HumcatH	MWATLPLLCA	GAWLLGVPVC GAAELSVNSL EKHFHKSWS	KHRKTYST..
HumcatB	.....	.....MWQLWAS	LCCLLVLANA
HumcatD	.....MQP	SSLLPLALCL LAAPASALVR IPLHKFTSIR	RTMSEVGGSV
HumcatE	.....MKT	LLLLLLVLLE LGEAOGSLHR VPLRRHPSLK	KKLRARSQ.L
HumcatG	.....MQP	LLLLLAFLLP TGAEAGEI..	.....IGGRE
	51		100
HumcatO	DEISRRL.IW	EKNLKYISIH NLEASLGVHT YELAMNHLGD	MTSEEVVQKM
RabOC-2	DEISRRL.IW	EKNLKHISIH NLEASLGVHT YELAMNHLGD	MTSEEVVQKM
HumcatS	EEAVRRL.IW	EKNLKFMVLMH NLEHSMGMHS YDLGMNHLGD	MTSEEVMSLM
HumcatL	EEGWRR.VW	EKNMKMIELH NOEYREGKHS FTMAMNAFGD	MTSEEFQVM
HumcatH	EEYHHRLOTF	ASNWRKINAH N....NGNHT FKMALNQFSD	MSFAEIKHKY
HumcatB	RSRPSFHPVS	DELVNYVNKR NTTWQAGHNF YNVDMSYLKR	LCGTFL....
HumcatD	EDLIAKGPVS	KYSQAVPAVT EGPIPEVLKN Y.MDAQYYGE	IGIGTPPQCF
HumcatE	SEFWKSHNLD	MIQFTESCSM DQSAKEPLIN Y.LDMEYFGT	ISIGSPPQNF
HumcatG	SRPHSRPYMA	YLQIQSPAGQ SRCG.....G F.LVREDFVL	TAAHCWGSNI
	101		150
HumcatO	TGLKVPLSHS	RSNDTLYIPE WEGRAP.DSV DYRKKG.YVT	PVKNOGQCGS
RabOC-2	TGLKVPPSRS	HSNDTLYIPD WEGRTP.DSI DYRKKG.YVT	PVKNOGQCGS
HumcatS	SSLRVP.SQW	QRNIT.YKSN PNRILP.DSV DWREKG.CVT	EVKYQGSCGA
HumcatL	NGFQ...NRK	PRKGKVFQEP LFYEAP.RSV DWREKG.YVT	PVKNOGQCGS
HumcatH	L.WSEPQNCS	ATKSNYLRGT ..GPYP.PSV DWRKKGNFVS	PVKNOGACGS
HumcatB	.....GGPK	PPQRMFTED LKLPASFDAR EQWPQCPTIK	EIRDQGSCGS
HumcatD	TVVFDTGSSN	LWVPSIHCKL LDIACWIHHK YNSDKS..ST	YVKNGTSTFDI
HumcatE	TVIFDTGSSN	LWVPSVYCT. .SPACKTHSR FQPSQS..ST	YSQPGQSFSI
HumcatG	NVTLG.....	.....AHNIQRR ENTQQH..IT	ARRAIR..HP
	151		200
HumcatO	CWAFSSVGAL	EGQLKKKTGK LLN..LSPQN LVDCVSE...ND..	GCGGGY
RabOC-2	CWAFSSVGAL	EGQLKKKTGK LLN..LSPQN LVDCVSE...NY..	GCGGGY
HumcatS	CWAFSAVGAL	EAQLKLKTGK LVS..LSAQN LVDCSTEKYG	NK..GCNNGF
HumcatL	CWAFSATGAL	EGQMFRTGR LIS..LSEQN LVDC.SGPQG	NE..GCNNGL
HumcatH	CWTFSTTGAL	ESAIAIATGK MLS..LAEQQ LVDC.AODFN	NY..GCQGG
HumcatB	CWAFGAVEAI	SDRICIHTNA HVSVEVSAED LLTCCGSMCG	D...GCNNGY
HumcatD	HYGSGSLSGY	LSQDTVSVPC QSASSASALG GVKVERQVFG	EATKQPGITF
HumcatE	QYGTGSLSGI	IGADQVSV...E GLTVVGQQFG	ESVTEPGQTF
HumcatG	QYNQRTIQND	IMLLQLSRR. ....VRRNRNVNP	VALPRAQEGL

FIG.2A

	201		250
HumcatO	MTNAFQYVOK	NRGIDSEDAY	.....PYVGQEE
RabOC-2	MTNAFQYVQR	NRGIDSEDAY	.....PYVGQDE
HumcatS	MTTAFQYIID	NKGIDSDASY	.....PYKAMD
HumcatL	MDYAFQYVQD	NGGLDSEESY	.....PYEATEE
HumcatH	PSQAFQYILY	NKGIMGEDTY	.....PYQKDG
HumcatB	PAEAWNF.WT	RKGLVSGGLY	ESHVGCPRYS IPPCEHHVNG SRPPCTGEGD
HumcatD	IAAKFDGIL.	..GMAYPRIS	VNNVLPVFDN LMQOKLVDQN IFSFYLSRDP
HumcatE	VDAEFDGIL.	..GLGYPSLA	VGGVTPVFDN MMAQNLVDLP MFSVYMSSNP
HumcatG	RPGTLCTVA.	..G..WGRVS	MRRGTDTLRE VQLRVQRDRQ CLRIFGSYDP

	251		300
HumcatO	SCM.....	YNPTGKAAK	CRGYREIPEG N.EKALKRAV ARVGPVSVAI
RabOC-2	SCM.....	YNPTGKAAK	CRGYREIPEG N.EKALKRAV ARVGPVSVAI
HumcatS	KCQ.....	YDSKYRAAT	CSKYTELPYG R.EDVLKEAV ANKGPVSVGV
HumcatL	SCK.....	YNPKYSVAN	DTGFVDIPK. Q.EKALMKAV ATVGPIISVAI
HumcatH	YCK.....	FQPGKAIGF	VKDVANITIIY D.EEAMVEAV ALYNPVSFAP
HumcatB	TPKCSKICEP	GYSPTYKQDK	HYGYNSYSVS NSEKDIMAEI YKNGPVEGAF
HumcatD	DAQPGGELML	GGTDSKYYKG	SLSYLVNTRK AYWQVHLDQV EVASGLTLCK
HumcatE	EGGAGSELIF	GGYDHSFSG	SLNWVPVTQK AYWQIALDNI QVGGTVMFCS
HumcatG	RRQ.....	.....ICVGDR	RERKAAPK.. GDSGGPLLCN

	301		350
HumcatO	DASLTSFQFY	SKGVYYDESC	..NSDNLNHA VLAVGYGIQ. ...KGNKHWI
RabOC-2	DASLTSFQFY	SKGVYYDENC	..SSDNVNHA VLAVGYGIQ. ...KGNKHWI
HumcatS	DARHPSFFLY	RSGVYYEPSC	...TONVNHG VLVVGYGDL. ...NGKEYWL
HumcatL	DAGHESFLFY	KEGIYFEPDC	..SSEMDHG VLVVGYGFES TESDNKYYWL
HumcatH	EVTQD.FMMY	RTGIYSSTSC	HKTPDKVNHA VLAVGYG... .EKNIGIPYWI
HumcatB	SV.YSDFLLY	KSGVYQHTG	EMMGG...HA IRILGWGVE. ...NGTPYWL
HumcatD	EGCEA...IV	DTGTSLMVGP	VDEVRELQKA IGAVPLIQGE YMIPCEKVST
HumcatE	EGCQA...IV	DTGTSLITGP	SDKIKQLQNA IGAAP.VDGE YAVECANLNV
HumcatG	NVAHG...IV	SYGKSSGVPP	....EVFTRV SSFLPWIRTT MR....SFKL

	351		400
HumcatO	IK.....NS	WGENWGNKGY	ILMARNKNNH CGIAN..LAS FPKM.....
RabOC-2	IK.....NS	WGESWGNKGY	ILMARNKNNH CGIAN..LAS FPKM.....
HumcatS	VK.....NS	WGHNFGEQGY	IRMARNKGNH CGIAS..FPS YPEI.....
HumcatL	VK.....NS	WGEEWGMGGY	VKMAKDRRNH CGIAS..AAS YPTV.....
HumcatH	VK.....NS	WGPOWGMNGY	FLIERGK.NM CGLAA..CAS YPIPLV....
HumcatB	VA.....NS	WNTDWGDNGF	FKILRGQ.DH CGIESEVVAG IPRTDOYWEK
HumcatD	LPAITLKLGG	KGYKLSPEDY	TLKVSQAGKT LCLSGFMGMD IPPPSGPLWI
HumcatE	MPDVTFTING	VPYTLSPATY	TLLDFVDGMO FCSSGFQGLD IHPPAGPLWI
HumcatG	LDQMETPL..	.....	.....

FIG.2B

	401	428
HumcatO	.....	.....
RabOC-2	.....	.....
HumcatS	.....	.....
HumcatL	.....	.....
HumcatH	.....	.....
HumcatB	I.....	.....
HumcatD	LGDVFIGRYY TVFDRDNRRV GFAEAARL	
HumcatE	LGDVFIRQFY SVFDRGNRRV GLAPAVP	
HumcatG	.....	.....

FIG.2C